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Munitions Directorate initiates Campus Challenge

by Rex Swenson, Munitions Directorate

EGLIN AIR FORCE BASE, Fla. — Three years ago, the Air Force Research Laboratory's Munitions Directorate initiated the Revolutionary Technology (Rev Tech) program with the potential to create new airframe/ordnance and guidance/control paradigm shifts in technology.

The directorate dedicated a portion of its applied research budget to pursue high-risk, high-payoff revolutionary munitions related technologies. The principal goal of the program is to discover and foster technologies that may lead to the development of highly innovative solutions to defeat a variety of targets, including fixed and moving targets, hard and soft targets, and above ground and deeply buried targets.

According to Rev Tech program manager, Charles Cottrell, ideas and concepts representing new approaches are sought to defeat these different types of targets.

"One of the ways that the Rev Tech program seeks to discover and foster the development of innovative solutions is by involving students from universities all across America through a Rev Tech spin-off effort known as Campus Challenge," said Cottrell.

The first ever Campus Challenge problem solving competition invitational workshop meeting was held recently at the University of Florida Graduate Engineering and Research Center (GERC) in Shalimar, Fla. Representatives from 10 different universities met with Air Force representatives to go over the ground rules of the competition and learn more about the first challenge – defeating deeply buried targets.

"The objective of this first Campus Challenge effort is to derive one or more innovative methods to neutralize the operation of a well-defended, hardened/deeply buried facility located within an unfriendly country," explained Cottrell.

Munitions Directorate Chief Scientist Dr. Bob Sierakowski co-hosted the meeting with Cottrell and Dr. P.M. Sforza, director of the GERC. Other guest speakers included Bruce Patterson, who gave an overview of target characteristics, Dr. Tom Eastler, who briefed on target geology, Dan Brubaker and Dr. Al Ohrt talked about the different levels of functional defeat, and Brenda Solar ended the day with a briefing on contracting with the Air Force.

Universities chosen to participate in this first competition were Cornell, Georgia Tech, North Carolina A&T, Texas A&M, Arizona, Delaware, Maryland, Missouri (Columbia), Missouri (Rolla) and the University of Scranton.

Upon opening the meeting, Sierakowski explained to the group that, "the purpose of the competition is to solicit innovative, potentially paradigm-shifting ideas that have the potential, upon maturity, to successfully address specific real-world problems of interest to the Air Force research community. This direct competition method is," according to Sierakowski, "the spirit of the American way."

A commerce business daily broad area announcement was used to solicit competitors for this first Campus Challenge, which is broken down into two phases, explained Cottrell.

"The first phase is a white paper competition and a follow-on proposal competition. The objectives of the competition's first phase is to examine the problem presented by deeply buried targets and offer an innovative solution to that problem in the form of a submitted white paper," he explained. "The white papers can propose the use of emerging technologies, the innovative application of off-the-shelf technologies, or a combination of both," said Cottrell.

Once the papers are submitted in December, representatives from the Munitions Directorate will evaluate and select two of them for further (Phase II) competition.

According to Cottrell, the two universities that submit a winning white paper will each receive a Phase II \$150,000 grant. At the discretion of those institutions, use of the grants will "flesh out" their respective white papers and create well-structured development and transition proposals.

These Phase II proposals will, as a minimum, consist of a detailed technology roadmap, a detailed development and transition schedule, and a detailed cost estimate. The purpose of these Phase II propos-

Continued on page 2

Continued from page 1

als is to provide the Munitions Directorate with a comprehensive strategy, whereby the least amount of Air Force dollars can be best invested to mature the relevant technologies for advanced development.

“Campus Challenge will give the Air Force access to some of the best minds at the nation’s top engineering schools and open the door for the possible recruitment of outstanding students, said Cottrell. The directorate will also be able to approach a new cadre of nationally known professors for future collaboration. The Challenge will additionally provide the directorate with truly innovative solutions to vexing problems that can be confidently addressed via well-crafted, investment roadmaps,” he said.

According to Sierakowski, “It is anticipated that Campus Challenge will become a recurring event that could feature a different selection of participants each time. But the charter will always be the same - a challenge to match wits in devising solutions to real-world problems through the advent of new technology.” @